REMARKS

Applicants appreciate the continued examination as evidenced by the Second Non-Final Office Action dated October 18, 2007 (the "Action"). Applicants further appreciate the indication in the Action that Applicants' Reasons in Support of the Request for Pre-Appeal Brief Review dated May 29, 2007 (the "Pre-Appeal Brief Review Request") was persuasive.

However, the rejection of Claims 33-36 in the Action is **identical** to the rejection that was addressed in the Pre-Appeal Brief Review Request. In particular, Claims 33-36 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. 2005/0124154 to Park et al. ("Park"). The current Action is therefore inconsistent with the Notice of Panel Decision from Pre-Appeal Brief Review dated July 3, 2007 (the "Panel Decision"), which states: "The rejection is withdrawn..." Moreover, the arguments presented in the Pre-Appeal Brief Review Request are not even addressed in the current Action.

Applicants note that the Action withdraws the previous rejection of Claims 28-32 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,800,542 to Kim ("Kim"); however, the Action rejects Claims 28-32 under 35 U.S.C. § 102(e) as being anticipated by Park, which was cited in the Final Office Action dated February 26, 2007 with respect to Claims 33-36.

Reconsideration of the rejections of Claims 28-32 is respectfully requested in view of the remarks that follow.

I. Claims 33-36 are not anticipated by Park

Claim 33 recites a conductive structure including:

> a first layer comprising ruthenium;
> a second layer comprising a plurality of atomic layers of copper directly on the first layer comprising ruthenium; and
> a third layer comprising iodine directly on the second layer comprising a plurality of atomic layers of copper, remote from the first layer comprising ruthenium.

Applicants submit that Park does not disclose various recitations of Claim 33. The Action takes the position that the barrier layer **330** is the "first layer comprising ruthenium" the adhesion layer **340** is the "second layer comprising a plurality of

atomic layers of copper," and the layer **370** is the "third layer comprising iodine." *See* the Action, page 2.

As noted above, the rejection of Claims 33-36 is **identical** to the rejection which was addressed in the Pre-Appeal Brief Review Request. The current rejection of Claims 33-36 is clearly inconsistent with the **withdrawal** of such rejections by the Panel Decision. Therefore, the apparent reinstatement without explanation of the identical rejection previously withdrawn by the Panel ignores the Panel Decision and is improper. In addition, the arguments presented in the Pre-Appeal Brief Review Request are not even addressed in the current Action. **Because no additional rejections have been applied to Claims 33-36, Applicants respectfully request that Claims 33-36 be allowed consistent with the Panel Decision.** However, in order to advance prosecution in the application, Applicants' arguments with regard to the improperly reinstated rejections of Claims 33-36 are presented below.

Park discusses that the barrier layer **330** may be formed of ruthenium. *See* Park, paragraph 22. However, Park proposes various materials that could be used as the adhesion layer **340** (also labeled **240a/240b**), but does not discuss copper. *See* paragraph 25 (discussing various materials for the adhesion layer, *e.g.*, ruthenium, rhenium, nickel, palladium, osmium, iridium and platinum, tantalum, tantalum alloys, titanium, titanium alloys, tungsten and tungsten alloys). Therefore, the adhesion layer **340** does not meet the recitation of a "second layer comprising a plurality of atomic layers of copper" in Claim 33 as maintained in the Action. **If the rejection is maintained, Applicants respectfully request that any subsequent Action specifically point out where Park discloses that the adhesion layer 340 includes copper.**

Applicants note that the layer **360/370** in Park is described as a copper layer, and the catalyst **250b** is identified as iodine. *See* Park, paragraphs 29-30. However, the layer **360** is not "directly on the first layer comprising ruthenium" as recited in Claim 33 because the adhesion layer **340** in Park is between the ruthenium barrier layer **330** and the copper layer **360**. Therefore, the layer **360** also does not meet the recitation in Claim 33 of "a second layer comprising a plurality of atomic layers of copper directly on the first layer comprising ruthenium."

FIG. 2B

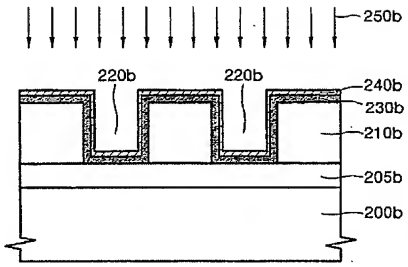
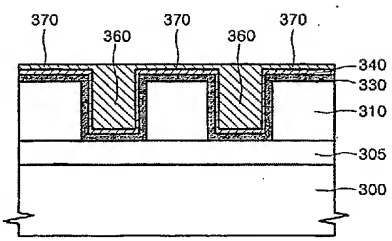


FIG. 3



In response to Applicants' arguments with respect to layer **360**, the Final Action dated February 26, 2007 states on page 4 that Applicants recite "a third layer comprising iodine directly on the second layer [comprising a plurality of layers of copper, remote from the first layer comprising ruthenium]." To the extent that the Action is taking the position that the layer **370** is equivalent to "a third layer comprising iodine," the layer **360/370** is described by Park as a copper layer **360/370**. Therefore, the copper layer **360/370** also does not meet the recitation of a third layer comprising iodine.

In addition, Applicants note that the iodine catalyst **250b** that is referred to in Park is not directly on a copper layer (such as the copper layer **360/370**) and is also not remote from layers **230/330** or **240/340** (which the Action identifies as equivalent to the first layer comprising ruthenium and the second layer comprising a plurality of atomic layers of copper, respectively). Park discusses depositing a copper layer with an iodine or iodine compound as a catalyst in paragraph 13. However, as shown in **Figures 2B** and **3**, the iodine catalyst **250b** is deposited before the copper layer **360/370** so that it is not remote from layers **230/330** or **240/340**. As noted in Park in paragraphs 29-30 (emphasis added):

> [A] semiconductor substrate **200b**, on which an adhesion layer **240b** is preformed, is treated with iodine or iodine compound as a catalyst **250b**.
> Referring to **FIG. 3** subsequently, a copper layer **360** is formed using (hfac)Cu(vtms) as a copper precursor on the surface of an adhesion layer **340** by using said chemical vapor deposition method.

Therefore, Park also does not meet the recitation of a "third layer comprising iodine directly on the second layer comprising a plurality of atomic layers of copper, remote from the first layer comprising ruthenium" in Claim 33. **If the rejection is**

maintained, Applicants respectfully request that any subsequent Action specifically point out where Park discloses a layer comprising iodine directly on the second layer [comprising a plurality of layers of copper remote from the first layer comprising ruthenium] in view of the above discussion.

Applicants submit that Claim 33 is patentable for at least the reasons discussed above. Claims 34-36 are patentable at least as depending from patentable Claim 33. Therefore, Applicants request that the rejections of Claims 33-36 under 35 U.S.C. § 102(e) be withdrawn.

Moreover, the apparent reinstatement without explanation of the identical rejection previously withdrawn by the Panel ignores the Panel Decision and is improper. **Applicants respectfully request that Claims 33-36 be allowed consistent with the Panel Decision.**

II. Claims 28-32 are not anticipated by Park

Claim 28 recites a conductive structure including:

> a first conductor;
> a plurality of atomic layers of a second conductor directly on the first conductor; and
> a first solid material directly on the plurality of atomic layers of the second conductor, remote from the first conductor, the first material being penetrable by the plurality of atomic layers of the second conductor relative to at least a second material other than the second conductor.

Applicants note that the Action does not expressly state that Claims 28-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Park. However, based on the discussion of Park on page 3 of the Action, Applicants are treating the rejection of Claims 28-32 as a rejection under 35 U.S.C. § 102(e) as being anticipated by Park. Clarification is respectfully requested.

Applicants submit that Park does not disclose that the first material is penetrable by the plurality of atomic layers of the second conductor relative to at least a second material other than the second conductor as recited in Claim 28. For example, as shown in **Figure 2A** of the Specification, a first material **230** is penetrable by a second conductor **220** relative to at least a second material other than the second conductor **220**, provided on a first conductor **210**. As shown in **Figure 2B**,

a plurality of atomic layers **220'** of the second conductor **220** is deposited on the first conductor **210** having the first material **230** thereon, such that the first material **230** is displaced through the plurality of atomic layers **220'** of the second conductor **220** during the depositing, as shown by arrow **240**, to provide the first material **230** on the plurality of atomic layers **220'** of the second conductor **220**, remote from the first layer **210**. **Figures 2A-2B** are reproduced below.

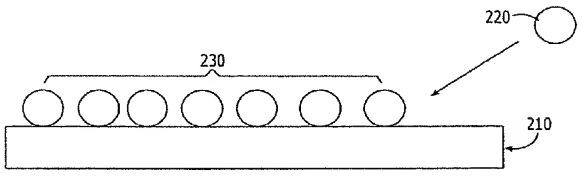


FIG. 2A

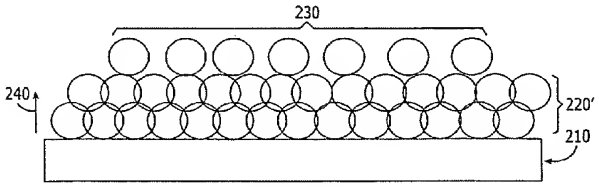
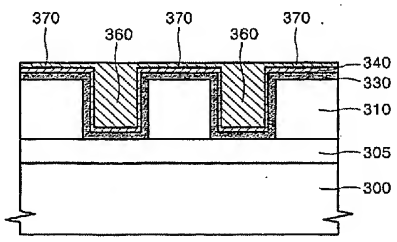


FIG. 2B

The Action takes the position that the layer **370** of Park is equivalent to the first material and that the layer **340** is equivalent to the plurality of atomic layers of the second conductor. *See* the Action, page 3. However, the layer **370** is clearly not penetrable by the layer **340** as shown in **Figure 3** of Park, and therefore, Park does disclose or render obvious that the first material is "penetrable by the plurality of atomic layers of the second conductor relative to at least a second material other than the second conductor" as recited in Claim 28.

FIG. 3



Applicants note that the Action does not cite any portion of Park as disclosing that the first material is "penetrable by the plurality of atomic layers of the second conductor relative to at least a second material other than the second conductor" as

recited in Claim 28. *See* the Action, page 3. **If the rejection is maintained, Applicants respectfully request that any subsequent Action specifically point out where Park discloses that the first material is penetrable by the plurality of atomic layers of the second conductor relative to at least a second material other than the second conductor.**

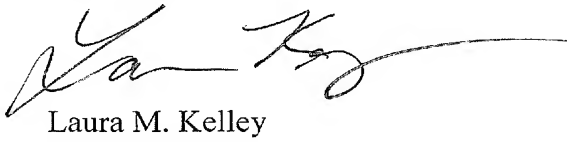
Applicants submit that Claim 28 is patentable for at least the reasons discussed above. Claims 29-32 are patentable at least as depending from patentable Claim 28. Therefore, Applicants request that the rejections of Claims 33-36 under 35 U.S.C. § 102(e) be withdrawn.

III. Conclusion

The apparent reinstatement without explanation of the identical rejection previously withdrawn by the Panel ignores the Panel Decision and is improper. **Applicants respectfully request that Claims 33-36 be allowed consistent with the Panel Decision**. In addition, Park clearly does not disclose that the first material is penetrable by the plurality of atomic layers of the second conductor relative to at least a second material other than the second conductor as recited in Claims 28, and no portion of Park has been identified in the Action as even allegedly disclosing this feature. Therefore, Applicants respectfully request that the rejection of Claim 28 and Claims 29-32 depending therefrom be likewise withdrawn.

Applicants have addressed the issues raised in the Action and respectfully request allowance of the present application for at least the reasons discussed above.

Respectfully submitted,



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Laneisha C. Hayes
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